COURSE OF STUDY *Maritime Port Strategic Sciences*

ACADEMIC YEAR *2025-2026*

ACADEMIC SUBJECT *Logistics and Maintenance in Harbour Industry*

General information	
Year of the course	2
Academic calendar (starting and ending date)	I semester (6 oct 2025 – 31 jan 2026)
Credits (CFU/ETCS):	8
SSD	*Industrial Mechanical Plants IIND-05/a (ex. ING-IND/17)*
Language	*Italian*
Mode of attendance	Remote attending with: - N. 1, 3 hours on-site lecture - N. 1, 3 hours recorded lecture - N. 8, 3 hours lectures (24 hours – 3 ECTS) of interactive on-line lectures. Theoretical lecturing of each topic of the course program will be followed practical exercises.

Professor/ Lecturer	
Name and Surname	Giovanni Mummolo
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Telephone	
Department and address	*Via Duomo 259*
Virtual room	Teams Code: 4rgbuel
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Monday 8:30 – 9:30; Wednesday 8:30 – 9:30 (via Teams)

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
200 hours	64 hours		136 hours
CFU/ETCS			
8	*8*		

Learning Objectives	The course of Logistics and Maintenance in Harbour Industry aims at providing concepts and methods for studying both internal and external logistics in harbour industry. With reference to the internal logistics fundamentals of layout of production systems and related material handling means with focus on harbour industry are provided. As far as the external logistics is concerned, after a description of main architectures of multi/inter modal logistic systems, main models for inventory and production sites location as well as technical/economic models for transportation means are presented.
Course prerequisites	*Basics of Math*

Teaching strategie	*On-line with:* ✓ 3 hours one-lecture in presence;

	✓ 3 hours one-lecture recorded; ✓ 24 hours of interactive lectures (corresponding to 8 hours lectures – 3 CFU). Theoretical lectures are followed by exercise of practical character.
Expected learning outcomes in terms of	
Knowledge and understanding on:	○ the course provides the knowledge for identifying the main aspects of the logistics and maintenance in the maritime sector referring to the evaluation of the strategies and more efficient mode of transportation. ○ The course is focused on the supplies' management in industrial warehouses, stoking solution adopted, inbound/outbound material handling strategies as well as techniques for analysis and monitoring of maintenance processes.
Applying knowledge and understanding on:	○ by analyzing full real-case studies, the course will provide the students with the evaluation tools allowing to quantify the efficiency of different logistics models and maintenance processes ○ For each full case, the student will identify the more convenient strategy based on the existing constraints, decision variables, and parameters to be optimized.
Soft skills	• *Making informed judgments and choices* *Alternative scenario analysis carried out by different logistic approaches, the student will be able to:* ○ Improve her/his judgement capability; ○ Identify, case by case, best solutions; ○ Optimize the management of logistic flows of the product, by considering the product's features, maintenance constraints and expectations of involved subjects; • *Communicating knowledge and understanding* *At the end of the course attendance, the student will be able to:* ○ Describe logistic factors, and maintenance strategies; ○ Express by adequate specialistic terms; ○ Develop communication abilities, both oral and written, also by classroom discussion, factories visits, and final examination. • *Capacities to continue learning* *At the end of the course, the student will be able to:* ○ Autonomously face with new logistic problems; ○ Identify adequate models and methods to tackle new problems; ○ Improve the knowledge along the evolution of technology and logistic models.
Syllabus	
Content knowledge	• Introduction; • An overview of logistic solutions and requirements; • Transport systems for internal logistic. Manual and automatic systems, special-purpose vehicles and equipment, installations and machines; • Details on technical features of internal logistic systems: operating features, operation and maintenance costs, purchase criteria; special-purpose equipment; installation and management; operation costs, safety issues; • Industrial warehouses: technical and management issues: warehouse functions; loading units; manual and automated warehouses; optimization problems in warehouses design; stock management principles; information systems and procedures for warehouse management;

	• External logistics: main transport systems/solutions; internal-external logistics integration issues; distribution logistics; decision-making in logistics. • Reliability theory: functional and reliability charts, series and parallel systems, series-parallel systems, majority logic systems, stand-by systems. Organization and management of maritime maintenance service: maintenance planning, management of the maintenance spare parts, forecast of spare parts.
Texts and readings	• Monte Elementi di impianti industriali, Vol 1 e Vol 2 (Cap. 32 e 33) . Ed. LibreriaCortina Torino, 2002-2003. • A. Pareschi: "Logistica Integrata e Flessibile"; Ed. Esculapio – Bologna – 2002 • E. Rullani: "Sistema logistico e gestione della produzione"; in "Economia e Direzione dell'Impresa Industriale" – a cura di P. Saraceno – Ed. ISEDI Milano –1981 • L. Fedele, L. Furlanetto, D. Saccardi. Progettare e gestire la manutenzione, Ed.McGraw Hill, Milano, 2004.
Notes, additional materials	*Course slides*
Repository	Educational materials are available on TEAMS platform

Assessment	
Assessment methods	Oral examination of 30 minutes duration. The focus of the test consists of evaluating the capability of students adopting tools and solution approaches learned in the course to full real case study. Evaluate the knowledge of students on topics expressed in the full course,in terms of expressive abilities and proper terminology.

Assessment criteria	• *Knowledge and understanding*
	  ○ Level of details of topics developed
	• *Applying knowledge and understanding*
	  ○ Level of application of knowledge to practical cases.
	• *Autonomy of judgment*
	  ○ Critical reasoning capability
	• *Communicating knowledge and understanding*
	  ○ Clarity of exposition
	  ○ Appropriateness of language and technical terms
	• *Capacities to continue learning*
	  ○ Reasoning capability development

Final exam and grading criteria	*Finale vote is assigned in 30 units. The exam will be intend as passed in case of a vote greater than or equal to 18/30.*
Further information	
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